We claim:

CLAIMS

1. A method of estimating a channel in a communication system, the method comprising:

receiving a block of "n" transmitted symbols, the symbols including pilot symbols and "d" data symbols;

estimating a channel using the pilot symbols to create a channel estimate;

choosing a group of "m" strongest symbols from the "d" received data symbols;

compensating the group of "m" strongest symbols using the channel estimate to create a group of "m" compensated symbols;

re-estimating the channel using the group of "m" compensated symbols and pilot symbols; and either:

repeating the steps of choosing the group of "m" strongest symbols, compensating the group of "m" strongest symbols and re-estimating the channel, or

using a latest channel estimate to compensate all symbols within the block.

2. The method of claim 1, wherein the communication system is an OFDM communication system.

3. The method of claim 1, wherein "m" is less than "d".

4. The method of claim 1, wherein "m" equals "d".

5. The method of claim 1, wherein the communication system is associated with a multi-antenna receiver.

6. A method of estimating a channel in a communication system, the method comprising:

receiving a block of "n" transmitted symbols, the symbols including pilot symbols and "d" data symbols;

estimating a channel using the pilot symbols to create a channel estimate;

choosing a group of "m" strongest symbols from the "d" received data symbols;

compensating the group of "m" strongest symbols using the channel estimate to create a group of "m" compensated symbols;

re-estimating the channel using the group of "m" compensated symbols and pilot symbols; and either:

choosing a group of "x" strongest symbols, compensating the group of "x" strongest symbols and re-estimating the channel, or

using a latest channel estimate to compensate all symbols within the block.

7. The method of claim 6, wherein "m" is less than "d".

8. The method of claim 7, wherein "x" is less than "m".

9. The method of claim 6, wherein "x" is greater than "m".

10. The method of claim 6, wherein "d" equals "m" and "m" equals "x".

11. The method of claim 6, wherein the communication system is associated with an OFDM protocol.

12. The method of claim 6, wherein the communication system is associated with a multiple antenna receiver.

13. A method of estimating a channel in a wireless receiver, the method comprising:

receiving a block of "n" transmitted symbols, the block including pilot symbols and "d" data symbols;

estimating a wireless channel using the pilot symbols to create a channel estimate;

choosing a group of "m" strongest data symbols from the "d" received data symbols;

compensating the group of "m" strongest symbols using the channel estimate to create a group of "m" compensated symbols;

re-estimating the wireless channel using the group of "m" compensated symbols and pilot symbols; and

either:

repeating the steps of choosing the group of "x" strongest symbols, compensating the group of "x" strongest symbols and re-estimating the channel at least once, or

using a latest channel estimate to compensate all data symbols within the block.

14. The method of claim 13, wherein "m" equals "x".

15. The method of claim 13, wherein "x" is less than "m".

16. The method of claim 13, wherein "m" equals "d".

17. The method of claim 13, wherein if the steps of choosing a group of "x" strongest symbols, compensating the group of "x" strongest symbols and re-estimating the channel at least once are repeated, the steps are repeated a plurality of times.

18. A method of estimating a channel in a communication system, the method comprising:

receiving a block of symbols;

estimating a channel using at least one of the symbols;

choosing a group of symbols from the received symbols;

compensating the group of symbols using the channel estimate; and

re-estimating the channel using the group of compensated symbols and the at least one of the symbols.

19. The method of claim 18, further comprising either:

repeating the steps of choosing a group of symbols, compensating the group of symbols and re-estimating the channel, or

using a latest channel estimate to compensate all symbols within the block.

20. The method of claim 18, wherein the at least one of the symbols is a pilot symbol.

21. The method of claim 18, wherein the group of symbols chosen is chosen based on signal strength.

22. The method of claim 21, wherein the signal strength of the symbols chosen in the group is associated with a predetermined criteria.

23. A method of estimating a channel in a wireless receiver, the method comprising:

receiving a block of "n" transmitted symbols, the block including pilot symbols and "d" data symbols;

estimating a wireless channel using the pilot symbols to create a channel estimate;

choosing a group of "m" strongest data symbols from the "d" received data symbols;

compensating the group of "m" strongest symbols using the channel estimate to create a group of "m" compensated symbols;

re-estimating the wireless channel using the group of "m" compensated symbols and pilot symbols;

determining whether a number of iterations is equal to or greater than T; and

if the number is less than T:

choosing "x" strongest symbols;

compensating the "x" strongest symbols; and

repeating the method continuing at the step of re-estimating the channel using the "x" compensated symbols and the pilot symbols; and

if the number is equal to or greater than T:

using a latest channel estimate to compensate all data symbols within the block.

24. A method of estimating a channel in a wireless receiver according to claim 23, further comprising:

if "x" is equal to or greater than "m":

setting "m" equal to "x"; and

repeating the method from the step of choosing a group of "m" strongest symbols from the "d" received data symbols; and

if "x" is less than "m", continuing the method at the step of choosing "x" strongest symbols.

25. A system for performing channel estimation associated with a wireless communication system, the wireless communication system receiving a block of symbols including pilot symbols and data symbols, the channel estimation system comprising:

a symbol selector;

an initial channel estimator;

a symbol compensator; and

a channel estimator, wherein the initial channel estimator produces an initial channel estimate using the pilot symbols and the symbol selector chooses a group of "m" strongest data symbols, and wherein the "m" strongest data symbols are compensated using the initial channel estimate and the channel estimator re-estimates the channel using the compensated symbols and the pilot symbols.

26. A method of recovering data symbols from a plurality of data sequences using a symbol selector and a symbol compensator, the method comprising:

receiving the plurality of data sequences at the symbol selector;

choosing a strongest data sequence from the plurality of data sequences;

choosing "m" strongest data symbols from the strongest data sequence;

choosing "m" data symbols at the same frequency tone positions in at least one unchosen data sequence of the plurality of data sequences; and

recovering original symbols from the plurality of data sequences using the "m" strongest data symbols from the strongest sequence and the "m" data symbols from the at least one unchosen data sequence.

27. The method of claim 26, wherein the strongest data sequence is chosen according to a signal strength of each of the plurality of sequences.

28. A method of choosing data symbols to transmit to a symbol compensator, the method comprising:

receiving a plurality of data sequences at a symbol selector;

choosing a strongest data sequence from the plurality of data sequences;

choosing "m" strongest data symbols from the strongest data sequence;

choosing "m" data symbols at the same frequency tone positions in at least one unchosen data sequence of the plurality of data sequences; and

transmitting the "m" strongest data symbols from the strongest data sequence and the "m" data symbols from the at least one unchosen data sequence to the symbol compensator.